What is claimed is:

1. A method for designing a progressive addition lens, comprising a.) describing a progressive addition surface; and b.) optimizing the surface using a merit function of the formula:

$$MF = MF_{blur} + MF_{power} + MF_{other}$$

wherein:

MF_{blur} is a merit function that controls image blur;

MF_{power} is a merit function that controls the mean sphere power; and

MF_{other} is a merit function that controls constraints on cosmetics and manufacturability.

2. The method of claim 1, wherein the surface is described as a continuous, a differentially continuous, or a twice differentially continuous surface.

3. The method of claim1, wherein the surface is described according to the equation:

$$sag_{x,y} = Delta_{x,y} + \frac{c \cdot r^2}{1 + \left[1 - (1 + k) \cdot c^2 \cdot r^2\right]} + \alpha_1 \cdot r^2 + \alpha_2 \cdot r^4 + \alpha_3 \cdot r^6 + \alpha_4 \cdot r^8 + ...$$

wherein:

c is a surface curvature;

r is a radial distance from an optical axis of the lens;

k is a conic constant;

$\alpha 1$, $\alpha 2$, $\alpha 3$, $\alpha 4$ each are a coefficient; and

$Delta_{x,y}$ is a delta sag that is a function of x and y.

4. The method of claim 1, 2, or 3, wherein

$$MF_{blur} = \sum_{\theta_x}\sum_{\theta_y} Wrms_{\theta_x,\theta_y}\left(RMS_{\theta_x,\theta_y}\right)^2$$

wherein:

θ_x is a horizontal eye rotation angle;

θ_y is a vertical eye rotation angle;

$RMS_{\theta x,\theta y}$ is an RMS spot size calculated at an image of an eye lens; and

$Wrms_{\theta x,\theta y}$ is a weight for a field position.

5. The method of claim 1,2 or 3 wherein MF_{power} is:

$$MF_{power} = \sum_{\theta_x}\sum_{\theta_y} W\phi_{\theta_x,\theta_y}\cdot\left(\Phi_{\theta_x,\theta_y} - P_{\theta_x,\theta_y}\right)^2$$

wherein:

$P_{\theta x,\theta y}$ is a desired sphere power;

θ_x and θ_y are the eye rotation angles;

$\Phi_{\theta x,\theta y}$ is actual sphere power; and

$W\phi_{\theta x,\theta y}$ is the weighting for that particular field point on the power error.

6. The method of claim 4, wherein MF_{power} is:

$$MF_{power} = \sum_{\theta_x}\sum_{\theta_y} W\phi_{\theta_x,\theta_y}\cdot\left(\Phi_{\theta_x,\theta_y} - P_{\theta_x,\theta_y}\right)^2$$

wherein:

$P_{\theta x,\theta y}$ is a desired sphere power;

θ_x and θ_y are the eye rotation angles;

$\Phi_{\theta x,\theta y}$ is actual sphere power; and

$W\phi_{\theta x,\theta y}$ is the weighting for that particular field point on the power error.

7. A method for designing a progressive addition lens, comprising a.) describing at least two progressive addition surfaces; and b.) optimizing the surfaces using merit functions of the formula:

$$MF = MF_{blur} + MF_{power} + MF_{other}$$

wherein:

MF_{blur} is a merit function that controls image blur;

MF_{power} is a merit function that controls the mean sphere power; and

MF_{other} is a merit function that controls constraints on cosmetics and manufacturability.

8. The method of claim 7, wherein the surfaces are each independently described as a continuous, a differentially continuous, or a twice differentially continuous surface.

9. The method of claim7, wherein the surfaces are each described according to the equation:

$$sag_{x,y} = Delta_{x,y} + \frac{c \cdot r^2}{1 + \left[1 - (1 + k) \cdot c^2 \cdot r^2\right]} + \alpha_1 \cdot r^2 + \alpha_2 \cdot r^4 + \alpha_3 \cdot r^6 + \alpha_4 \cdot r^8 + ...$$

wherein:

c is a surface curvature;

r is a radial distance from an optical axis of the lens;

k is a conic constant;

$\alpha 1$, $\alpha 2$, $\alpha 3$, $\alpha 4$ each are a coefficient; and

$Delta_{x,y}$ is a delta sag that is a function of x and y.

10. The method of claim 7, 8, or 9, wherein MF_{power} is :

$$MF_{power} = \sum_{\theta_x}\sum_{\theta_y} W\phi_{\theta_x,\theta_y} \cdot \left(\Phi_{\theta_x,\theta_y} - P_{\theta_x,\theta_y}\right)^2 + Wadd_{\theta_x,\theta_y}\left[\left(AddF_{\theta_x,\theta_y} - PF_{\theta_x,\theta_y}\right)^2 + \left(AddB_{\theta_x,\theta_y} - PB_{\theta_x,\theta_y}\right)^2\right]$$

wherein

θ_x is a horizontal eye rotation angle;

θ_y is a vertical eye rotation angle;

$RMS_{\theta x,\theta y}$ is a RMS spot size calculated at an image of an eye lens;

$Wrms_{\theta x,\theta y}$ is a weight for a field position;

$AddF_{\theta x,\theta y}$ is a calculated add power on a front surface of the lens;

$AddB_{\theta x,\theta y}$ is a calculated add power on a back surface of the lens;

$PF_{\theta x,\theta y}$ is a target for an add power value for the front surface;

$PB_{\theta x,\theta y}$ is a target for an add power for the back surface; and

$Wadd_{\theta x,\theta y}$ is a weighting.

11. The method of claim 7, 8, or 9, wherein MF_{power} is :

$$MF_{power} = Wadd_{far}\left[\left(AddF_{far} - PF_{far}\right)^2 + \left(AddB_{far} - PB_{far}\right)^2\right] + \left[\sum_{\theta_x}\sum_{\theta_y} W\phi_{\theta_x,\theta_y} \cdot \left(\Phi_{\theta_x,\theta_y} - P_{\theta_x,\theta_y}\right)^2\right]$$

wherein

θ_x is a horizontal eye rotation angle;

θ_y is a vertical eye rotation angle;

$RMS_{\theta x,\theta y}$ is a RMS spot size calculated at an image of an eye lens;

$Wrms_{\theta x,\theta y}$ is a weight for a field position;

$AddF_{\theta x,\theta y}$ is a calculated add power on a front surface of the lens;

$AddB_{\theta x,\theta y}$ is a calculated add power on a back surface of the lens;

$PF_{\theta x,\theta y}$ is a target for an add power value for the front surface;

$PB_{\theta x,\theta y}$ is a target for an add power for the back surface; and

$Wadd_{\theta x,\theta y}$ is a weighting.

12. The method of claim 7, 8, or 9, wherein MF_{blur} is:

$$MF_{blur} = \sum_{\theta_x}\sum_{\theta_y}\left[Wrms_{\theta_x,\theta_y} \cdot \left(RMS_{\theta_x,\theta_y}\right)^2 + Wast_{\theta_x,\theta_y} \cdot \left(AstF_{\theta_x,\theta_y} - AF_{\theta_x,\theta_y}\right)^2 \right] \quad \text{(IX)}$$

wherein:

$AstF_{\theta x,\theta y}$ is either the surface astigmatism from the front surface or the contribution to the total lens astigmatism as seen by the eye from the front surface; and

$Wast_{\theta x,\theta y}$ are the weights placed on the unwanted astigmatism.

13. The method of claim 10, wherein MF_{blur} is:

$$MF_{blur} = \sum_{\theta_x}\sum_{\theta_y}\left[Wrms_{\theta_x,\theta_y} \cdot \left(RMS_{\theta_x,\theta_y}\right)^2 + Wast_{\theta_x,\theta_y} \cdot \left(AstF_{\theta_x,\theta_y} - AF_{\theta_x,\theta_y}\right)^2 \right] \quad \text{(IX)}$$

wherein:

$AstF_{\theta x,\theta y}$ is either the surface astigmatism from the front surface or the contribution to the total lens astigmatism as seen by the eye from the front surface; and

$Wast_{\theta x,\theta y}$ are the weights placed on the unwanted astigmatism.

14. The method of claim 11, wherein MF_{blur} is:

$$MF_{blur} = \sum_{\theta_x}\sum_{\theta_y}\left[Wrms_{\theta_x,\theta_y} \cdot \left(RMS_{\theta_x,\theta_y}\right)^2 + Wast_{\theta_x,\theta_y} \cdot \left(AstF_{\theta_x,\theta_y} - AF_{\theta_x,\theta_y}\right)^2 \right] \quad \text{(IX)}$$

wherein:

$AstF_{\theta x,\theta y}$ is either the surface astigmatism from the front surface or the contribution to the total lens astigmatism as seen by the eye from the front surface; and

$Wast_{\theta x,\theta y}$ are the weights placed on the unwanted astigmatism.

15. The method of claim 1 or 7, further comprising c.) determining a set of coefficients to describe the lens surface to minimize the value of the merit function.

16. The method of claim 15, wherein step c.) is carried out by (i) selecting optimization variables that are a curve for a front surface and a curve for the back surface of the lens; and (ii) minimizing MF_{other}.

17. A progressive addition lens, comprising a first and a second progressive addition surface, wherein an unwanted astigmatism for the first progressive addition surface is greater than 0.25 diopters.

18. A progressive addition lens, comprising a first progressive addition surface having a first add power and a second progressive addition surface having a second add power, wherein a maximum unwanted astigmatism of the first progressive surface is greater than the first add power.

19. A progressive addition lens, comprising a first progressive addition surface, a second progressive addition surface, and a total lens add power that is about the sum of the add power of the first and second progressive surfaces, wherein a maximum unwanted astigmatism of the lens is less than about one-half of the total lens add power.